

Docket No. 240465US3

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

IN RE APPLICATION OF: Shigeo KOFUNE, et al.

SERIAL NO: New Application

GAU:

FILED: Herewith

EXAMINER:

FOR: TEMPERATURE MEASURING APPARATUS OF HIGH MELTING POINT METAL CARBIDE-CARBON SYSTEM MATERIAL THERMOCOUPLE TYPE AND METHOD FOR PRODUCING THE APPARATUS

**INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97**

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

Applicant(s) wish to disclose the following information.

**REFERENCES**

- The applicant(s) wish to make of record the references listed on the attached form PTO-1449. Copies of the listed references are attached, where required, as are either statements of relevancy or any readily available English translations of pertinent portions of any non-English language references.
- A check is attached in the amount required under 37 CFR §1.17(p).

**RELATED CASES**

- Attached is a list of applicant's pending application(s) or issued patent(s) which may be related to the present application. A copy of the patent(s), together with a copy of the claims and drawings of the pending application(s) is attached along with PTO 1449.
- A check is attached in the amount required under 37 CFR §1.17(p).

**CERTIFICATION**

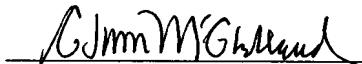
- Each item of information contained in this information disclosure statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.
- No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned, having made reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this statement.

**DEPOSIT ACCOUNT**

- Please charge any additional fees for the papers being filed herewith and for which no check is enclosed herewith, or credit any overpayment to deposit account number 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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METAL CARBIDE-CARBON SYSTEM MATERIAL THERMOCOUPLE TYPE,  
AND METHOD FOR PRODUCING THE APPARATUS

**STATEMENT OF RELEVANCY**

**Reference AO (3-17075) of Form PTO-1449:**

This reference is explained in the specification.

**Reference AP (7-55586) of Form PTO-1449:**

PURPOSE: To prevent insulation deterioration of a sheathed thermocouple in prolonged use or preservation by using non-oxide ceramic as an inorganic insulating matter of the sheathed thermocouple.

CONSTITUTION: A sheath 1 is filled with a non-oxide ceramic 3a that does not allow moisture to react carbon dioxide or the like. The ceramic 3a herein used is a nitride compound such as NB or AlN, a carbide compound such as Sic or ZrC or a combination of the above compounds that do not react each other in a range of application temperature in a powder or a granule. Excellent in high conductivity, electric insulating property and heat resistance, the ceramic 3a has a high temperature upper limit near a high temperature limit and moreover is high in measuring accuracy when a temperature measurement is made using this thermocouple. With difficulty in reacting moisture, the ceramic 3a enables the prevention of insulation deterioration in the prolonged use of the sheathed thermocouple and in the preservation thereof.

Application of a metal carbide to a sheathed thermocouple is disclosed, but the combination with a carbon system material is not disclosed.

**Reference AQ (63-169081) of Form PTO-1449:**

PURPOSE:To measure the temperature even at a high temp. in an oxidizing atmosphere by causing a one side leg part of a thermocouple to be constructed in the form of a tube and the other side leg part of it to be formed in the tube as a rod arranged in a concentric configuration; besides, by causing one end of it to be connected in a state of maintaining conductivity and an outside tube to be formed by silicon carbide and also an inside rod to be formed by carbon.

CONSTITUTION:A one side leg part of a thermocouple is constructed in the form of a tube and the other side leg part of it is formed in the tube as a rod arranged in a concentric configuration; besides, one end of it is connected in a state of maintaining conductivity and an outside tube 1 is formed by silicon carbide and also an inside rod 2 is formed by carbon in consideration of specific practicability of this device in an oxidizing atmosphere. Further, the outside silicon carbide tube 1 functions as a protecting tube as well at the same time and as occasion demands, this device allows an inactive gas to flow into properly between the outside silicon carbide tube 1 and the inside carbon rod 2. Thus even though this device is used in the oxidizing atmosphere, not only it protects the inside carbon rod in safety but also it may perform a stable temp. measurement even at a high temp. of 2,000 deg.C or more.

Application of a carbon system material to a sheathed thermocouple is disclosed, but the combination with a metal carbide is not disclosed.

Form PTO 1449 (Modified)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY DOCKET NO. 240465US3		SERIAL NO. New Application	
LIST OF REFERENCES CITED BY APPLICANT				APPLICANT Shigeo KOFUNE, et al.			
				FILING DATE Herewith		GROUP	
<b>U.S. PATENT DOCUMENTS</b>							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	AA						
	AB						
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						
	AL						
	AM						
	AN						
<b>FOREIGN PATENT DOCUMENTS</b>							
		DOCUMENT NUMBER	DATE	COUNTRY	TRANSLATION		
					YES	NO	
	AO	3-17075	03/07/91	Japan			X
	AP	7-55586	03/03/95	Japan			X
	AQ	63-169081	07/13/63	Japan			X
	AR						
	AS						
	AT						
	AU						
	AV						
<b>OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, etc.)</b>							
	AW						
	AX						
	AY						
	AZ					<input type="checkbox"/> Additional References sheet(s) attached	
Examiner						Date Considered	
*Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							